

CERTIFICATE OF QUALITY

Client(s): Puma Energy Panamá **Sample Identification** SHORE TANK 203 (Despues de la descarga del MT ALPINE HIBISCUS)

Address: Puma Energy Panamá, Danalys.correa, 0789 La Boca Road Balboa, Ancon, Tel.:+507 211 0800, email:danalys.correa@puma-energy.com **Product** Low Sulfur Diesel Oil

Date of Reception Sample May 15, 2013 **Terminal** PATSA

Date of Analysis May 15, 2013 **Representative Sample** Composite(U,M,L)

Drawn By OTILATAM DE PANAMA,S.A., SECCION DE OPERACIONES **Insp. OTI** PT-13-0138

Volumen Disponible N/A **Lab OTI** LP-128-13

Volumen Total 23,750.68 NET BBLS

TESTS PERFORMED

Description of Test	Source Sample	Units	Method	Results	LOW SULFUR DIESEL OIL	
					Minimum	Maximum
Color, ASTM Scale	Composite	-----	ASTM D 1500 - 04a	<1.5	-----	2.5
Appearance		-----	ASTM D 4176	Pass	-----	Report
Cetane Index, Calculated		-----	ASTM D 976	46.6	45	-----
Corrosion, copper strip , 3 h at 50°C		-----	ASTM D 130	1a	-----	2
Ash Content		mass %	ASTM D 482	<0.001	-----	0.01
Sulfur Content		mass %	ASTM D 4294	0.0399	-----	0.05
Carbon Residue, 10% Bottoms		mass %	ASTM D 4530	0.02	-----	0.30
Water by Distillation + Sediment		% vol. + %wt	ASTM D 95 + ASTM D 473	0.0 + 0.0	-----	0.05
Flash Point, P.M.C.C		°C	ASTM D 93 A	60	60 (140)	-----
A.P.I. Gravity		° API	ASTM D 287	35.2	32.0	-----
Viscosity Kinematic at 40°C		cSt	ASTM D 445	2.400	1.9	4.1
Distillation Temperature, PI		°C	ASTM D 86	164.0	-----	Report
10%		°C	ASTM D 86	199.0	-----	Report
50%		°C	ASTM D 86	262.0	-----	288 (550)
90%		°C	ASTM D 86	324.0	-----	360 (680)
PF		°C	ASTM D 86	351.0	-----	Report
Residue , %Vol.		% Vol.	ASTM D 86	1.8	-----	2.0
Loss, %Vol.		% Vol.	ASTM D 86	0.2	-----	2.0
(*) Lubricity		Micron	ASTM D 6079 √	340	-----	520

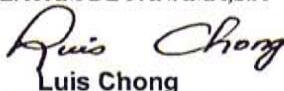
Note:

Results marked as (*) are submitted as reported by a third Laboratory: Core Laboratories Panama, S.A.

√ These methods are not accredited by CNA of Panama.

The results of the test indicated on this report are only valid for the indicated sample.

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Luis Chong

For OTILATAM DE PANAMA,S.A.

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Date of Reception Sample May 15, 2013 **Terminal** PATSA

Date of Analysis May 15, 2013 **Representative Sample** Composite(U,M,L)

Drawn By OTILATAM DE PANAMA,S.A., SECCION DE OPERACIONES **Insp. OTI** PT-13-0138

Volumen Disponible N/A **Lab OTI** LP-129-13

Volumen Total 23,872.28 NET BBLS

TESTS PERFORMED

Description of Test	Source Sample	Units	Method	Results	LOW SULFUR DIESEL OIL	
					Minimum	Maximum
Color, ASTM Scale	Composite	-----	ASTM D 1500 - 04a	<1.5	-----	2.5
Appearance		-----	ASTM D 4176	Pass	-----	Report
Cetane Index, Calculated		-----	ASTM D 976	46.5	45	-----
Corrosion, copper strip , 3 h at 50°C		-----	ASTM D 130	1a	-----	2
Ash Content		mass %	ASTM D 482	<0.001	-----	0.01
Sulfur Content		mass %	ASTM D 4294	0.0422	-----	0.05
Carbon Residue, 10% Bottoms		mass %	ASTM D 4530	0.02	-----	0.30
Water by Distillation + Sediment		% vol. + %wt	ASTM D 95 + ASTM D 473	0.0 + 0.0	-----	0.05
Flash Point, P.M.C.C		°C	ASTM D 93 A	60	60 (140)	-----
A.P.I. Gravity		° API	ASTM D 287	35.1	32.0	-----
Viscosity Kinematic at 40°C		cSt	ASTM D 445	2.404	1.9	4.1
Distillation Temperature, PI		°C	ASTM D 86	163.0	-----	Report
10%		°C	ASTM D 86	198.0	-----	Report
50%		°C	ASTM D 86	263.0	-----	288 (550)
90%		°C	ASTM D 86	323.0	-----	360 (680)
PF		°C	ASTM D 86	351.0	-----	Report
Residue , %Vol.		% Vol.	ASTM D 86	1.8	-----	2.0
Loss, %Vol.		% Vol.	ASTM D 86	0.2	-----	2.0
(*) Lubricity		Micron	ASTM D 6079 √	300	-----	520

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Date of Reception Sample	May 15, 2013	Terminal	PATSA
Date of Analysis	May 15, 2013	Representative Sample	Composite(U,M,L)
Drawn By	OTILATAM DE PANAMA,S.A., SECCION DE OPERACIONES	Insp. OTI	PT-13-0138
Volumen Disponible	N/A	Lab OTI	LP-128-13
Volumen Total	23,750.68 NET BBLS		

TESTS PERFORMED

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Carbon Residue, 10% Bottoms		mass %	ASTM D 4530	0.02	-----	0.30
Water by Distillation + Sediment		% vol. + %wt	ASTM D 95 + ASTM D 473	0.0 + 0.0	-----	0.05
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